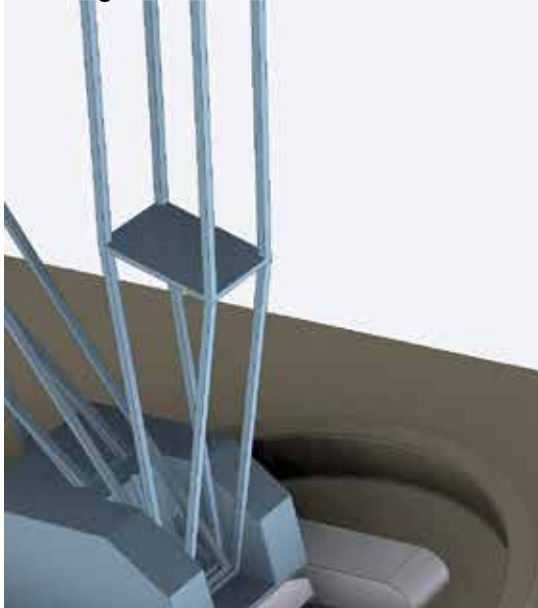




## INTRODUCTION

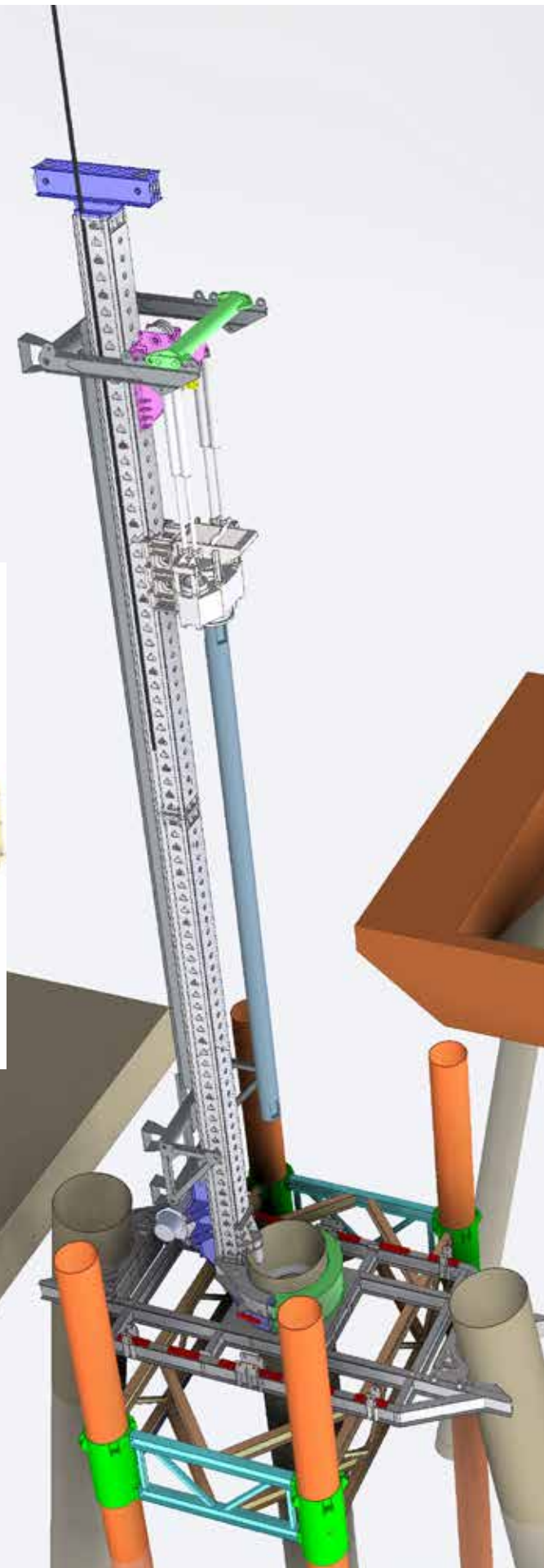
Birmingham has been revolutionizing the foundation industry with its bold and innovative approach to every project. Birmingham supplies high quality, project specific equipment, serviced by a world-class team of designers, engineers and field personnel. Birmingham drilling systems demonstrate the company's strength in harnessing over 120-years of construction experience with innovation and practicality in equipment design and manufacturing.

Birmingham drills represent the most ruggedly designed and extensively field-tested all-purpose drills in the foundation industry. Birmingham drills can be used in almost every type of drilling application and specialize in Down-the-Hole-Hammer applications. There is simply no better choice for foundation contractors than a Birmingham drill.



## PROJECT PLANNING AND VISUALIZATION

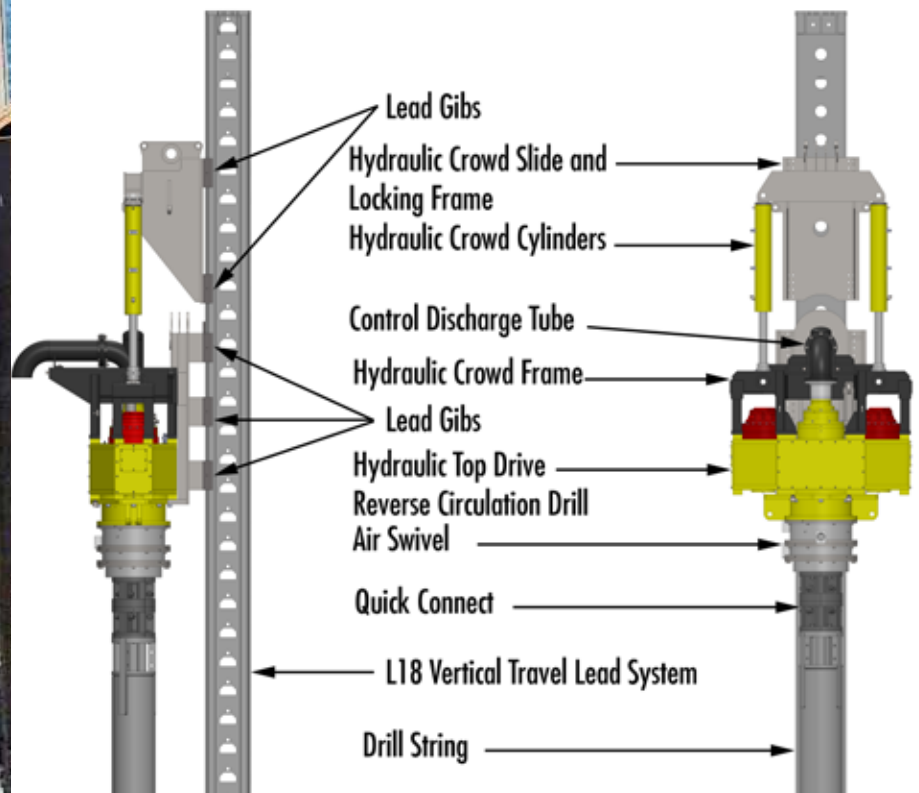
The synergy of foundation construction and equipment expertise together with talented design engineers places Birmingham in a unique position to assist other foundation contractors in planning and visualizing foundation construction projects. In recent years Birmingham has provided contractors with detailed computer models of their projects at the planning and bidding stages as well as throughout production. This allows Birmingham to recommend equipment and procedures, and provide site supervision – a service not offered by other equipment manufacturers.





## PRODUCTION DRILLING

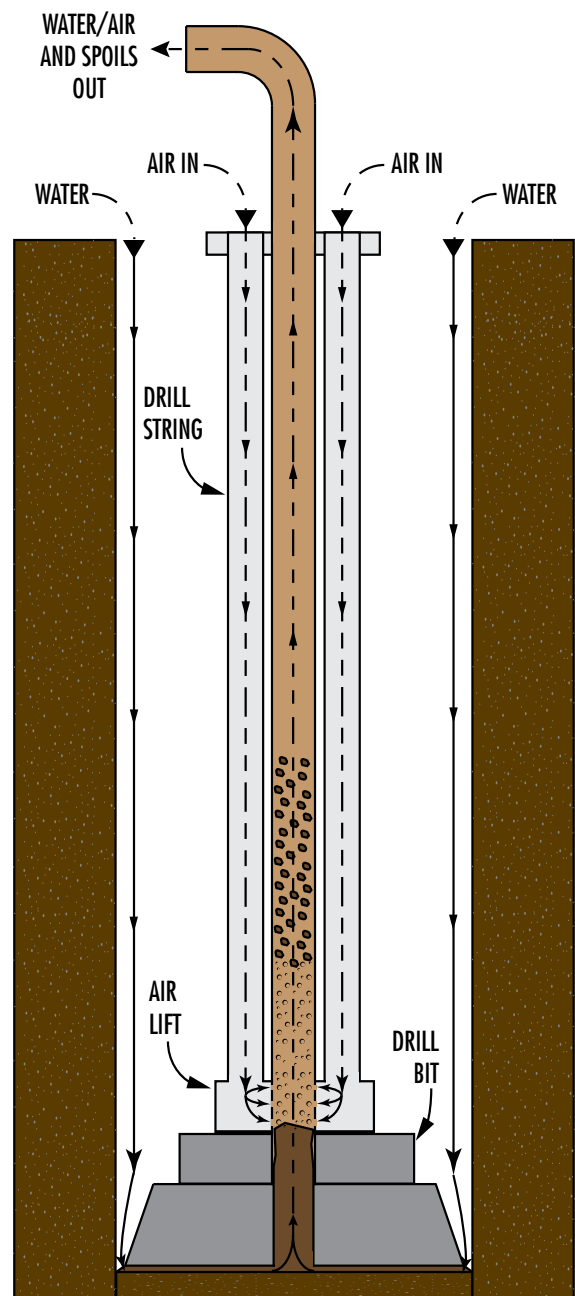
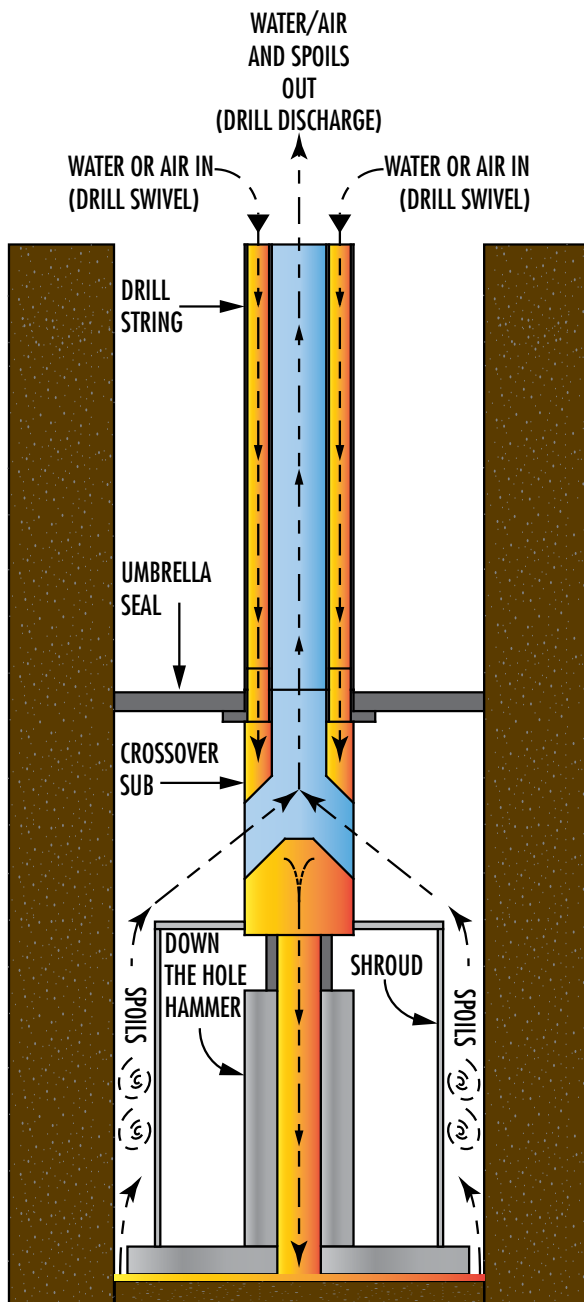
Productive drilling occurs when the majority of the time spent on-site is devoted to actually drilling. Many competitor drill rigs involve time draining activities such as: long rig-up times, difficult and time consuming pile placement, adding more and splicing piles. Bermingham drilling systems are intelligently designed to minimize these deficiencies and maximize production rates through hard rock. Bermingham's leads are most often designed to allow for one stroke, meaning that there is no slow installation of additional drill string and no pile splicing necessary. Bermingham drilling systems are the most maneuverable on the market thanks to the patented combination with the Vertical Travel Lead. This maneuverability greatly decreases setup time so that the majority of time is spent drilling. The Bermingham lead systems in conjunction with our hydraulic drills, drill string, impact hammer and custom rotary bits allow for execution of drilling, driving and rock socketing efficiently and seamlessly.



## REVERSE CIRCULATION DRILLING

'Reverse Circulation' drilling involves the supply of air down through the drill-string to decrease the 'effective density' of the water in the center of the drill-string. Operating much like an 'air-lift', the drilling spoils are carried out of the hole through this rising column lower-density air/water mixture (see Figure below). Reverse Circulation requires that the outer annular area of the casing be kept full of water in order to provide the hydraulic head required to effectively 'push' the central column of air/water/spoils up and out of the hole through the central pipe of the drill-string. Reverse Circulation is an effective drilling technique for a wide range of hole diameters including very large holes – up to 3-m diameter and

larger. It is also effective for very deep holes, and holes drilled into hard-rock. Another advantage of Reverse Circulation is the ability to control/direct the drilling spoils by simply directing the discharge pipe to the desired site location or even to a dedicated barge (for environmentally sensitive, overwater applications). This cannot be accomplished with direct circulation which allows water and cuttings to spill out of the top of the pile. Reverse Circulation can be used in conjunction with rotary drilling bits as well as Down-the-Hole-Hammer applications. The Berminghammer Reverse Circulation Drills are particularly well suited to Down-the-Hole-Hammer applications due to their simple, rugged design and construction.



## BERMINGHAM REVERSE CIRCULATION DRILL PERFORMANCE SPECIFICATIONS

Model Number	BHD-40	BHD-80
Max Torque @5000psi	47,000 ft-lbs / 63 kNm	84,600 ft-lbs / 114 kNm
Min Drill Speed (RPM)	6	6
Max Drill Speed (RPM)	60	60
Req'd Flow at Max RPM	210 gpm / 800 L/min	420 gpm / 1600 L/min
Rotation	Bi-Directional	Bi-Directional
Weight	15,000 lbs / 6805 kg	20,400 lbs / 9250 kg
Main Shaft	Hollow	Hollow
Diameter of Shaft Pass Through	7" / 178mm	7" / 178mm
Output Connection	24" Nom Dia Flat Face Multi-bolt pattern**	24" Nom Dia Flat Face Multi-bolt pattern**



**BHD-40**



**BHD-80**

## BERMINGHAM DRILL STRING

Model	18" Flangeless	20" External Flange	24" External Flange
Standard Lengths	10', 20', 30', 39'	10', 20', 30', 39'	13', 20', 42', 50'
Average Weight <sup>1</sup> .	225 lbs/ft / 335 kg/m	250 lbs/ft / 372kg/m	270 lbs/ft / 402kg/m
Maximum Pull Out	50 ton / 500 kN	150 ton / 1,500 kN	200 ton / 1,190 kN
Maximum Operating Torque	80,000 ft-lbs / 110 kNm	250,000 ft-lbs / 340 kNm	300,000 ft-lbs / 405 kNm
Maximum Outside Diameter	18.5" / 47.0cm	26" / 66.0cm	32" / 81.3cm
Inner Tube Inside Diameter	7" / 17.8cm	8" / 20.3cm	9.75" / 24.8cm
Quick Disconnect	Traditional – 18" OD	High Tension – 27.5" OD	High Tension – 32.0" OD

Notes:

1. Exact drill string weight depends on lengths chosen
2. General section properties are for the tube sections at the center of the drill string. Section properties at the drill string joints will be different. Air tube sections are not considered.



## VERSATILITY IN LEAD STYLE

### Lead-Mounted Drill Rigs on Crawler Crane

For use on land or over-water, combining a Berminghammer Drill with a Berminghammer Vertical Travel Lead (VTL) offers the most versatility. Movement from hole-to-hole will occur more quickly with this leader system than with any other drilling system and can operate on vertical or battered piles. The versatility of the lead system can allow for multiple insertions from one crane/barge location. On one project, a Berminghammer VTL System and a BHD-40 drill out-performed a dedicated 'drilling-rig' by 5 to 1. Bermingham personnel specialize in the rig-up and rig-down of our VTL Systems and we have the ability to connect our systems to virtually any make of crane. A VTL System has the advantage of being able to 'activate' the weight of the lead and attachments as additional 'crowd' for the drilling.



### Flying Lead

In some overwater applications a flying lead and drill might be the best choice. If the supporting crane does not have adequate capacity to support a VTL System, or if the required drilling equipment is very heavy then an underhung system may be the most economical. Berminghammer leads rigged as underhung leads come equipped with hydraulic clamp that can 'grab' the casing to maintain the underhung lead in a suitable position for drilling. Applying 'crowd' in this type of lead system requires a hydraulic-crowd attachment to be positioned above (or below) the drill, and uses a pin-connection to the leader to apply crowd. Bermingham have performed many projects where our hydraulic-crowd system has been used effectively.





## EXTREME DIAMETER AND DEPTH CFA DRILLING

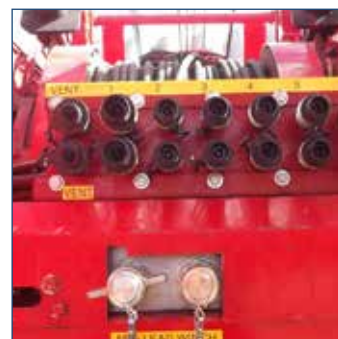
Birmingham's long history of innovation has led to many drilling depth records being broken. The L-27HT Lead System shown on the left was designed for 24 inch diameter CFA drill depths of approximately 130 feet. Birmingham's next innovation, the H-36 Lead shown on the right, was designed to drill 48 inch diameter CFA piles up 167 feet deep. Birmingham is often approached by contractors that would like to drill deeper or larger diameters than what their current rigs can accomplish. Birmingham is up to the task of finding a way to make the impossible, possible.



## ACCESSORIES AND INNOVATIONS

### Power Pack Brackets

Allows a power pack to be mounted to the rear of the crane



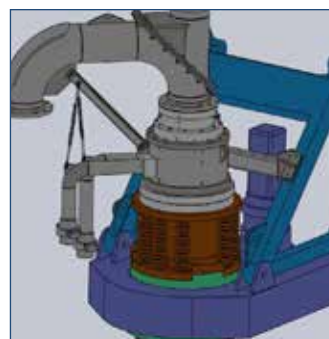
### Crane Hydraulic Retrofit

Utilizes existing crane hydraulics to run Bermingham Drills & more



### Stand Alone Valves (SAV)

Allows a customer to utilize an existing Vibro powerpack to run Bermingham drills & more

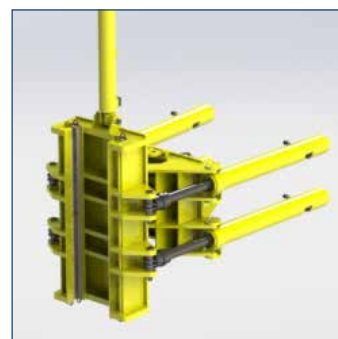


### 360 Degree Crossover

Collects cuttings from all angles, evacuating these cuttings much faster than a traditional crossover

### Custom RC Swivels for European Drill Rigs

Adapts European drill rigs to be able to drill RC



### Custom Casing Gates for European Drill Rigs

Helps assure proper placement and aids in maintaining verticality

### High Capacity Torque Resistant Swivels

Allows for higher torque: Models to resist 250,000 ft-lbs / 350,000ft-lbs)

## HOW TO CONTACT US

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